Honeywell

GHE Series Igniters

USER MANUAL

Honeywell High Energy Igniters

The unique high energy circuit makes use of a controlled capacitor discharge to produce a high energy spark at a pulse rate of approximately 3 to 5 times per second that ignites liquid or gaseous fuels more reliably and consistently.

The Honeywell GHE igniter assembly is comprised of two major parts; a high energy source of ignition and an internal mix air-gas delivery system.

The third element of the GHE system is a high energy power pack that delivers 2,000VDC, 12 joules of energy to the end of the igniter spark tip. The power pack should be installed in a suitable cabinet.

APPLICATION

Honeywell GHE igniters are non-fouling, inextinguishable, high-energy electric igniters suitable for most liquid and gaseous fuels. They are available for both 1-7/8 in. and 2-7/8 in. diameter support tubes in lengths to suit the application.

FEATURES

- **High energy output for reliable ignition**
- **Suitable for most liquid and gaseous fuels**

⚠ CAUTION
Under no circumstances should this power pack be used for continuous firing of the igniter.

Table 1. GHE Igniter Ordering Guide.

Base Part Number	Length Adder	Description
GHE1-3	IGADD	High energy igniter assembly used with liquid and gaseous fuels, 1-3 MMBTU/hr (about 1-3 GJ/hr) capacity, 1-7/8 inch OD. Igniter is supplied with 36-inch SS flex gas hose, 36-inch SS flex air hose, burner mounting tube, high energy probe, igniter tip 12 in. long x 1/2 in OD. Standard assembly length 2 feet. Use IGADD for each 1-ft assembly length addition. Order 12-Joule POWERPACK-12-CS and associated cabling with canon plug separately (IGN-CPC-10). Use IGN-CPC-ADD cable adder for each additional foot in length required over 10-feet.
GHE2-5	IGADD	High energy igniter assembly used with liquid and gaseous fuels, 2-10 MMBTU/hr (about 2-10 GJ/hr) capacity, 2-7/8 inch OD. Igniter is supplied with 36-inch SS flex gas hose, 36-inch SS flex air hose, burner mounting tube, high energy probe, igniter tip 12 in. long x 1/2 in OD. Standard assembly length 2 feet. Use IGADD for each 1-ft assembly length addition. Order 12-Joule POWERPACK-12-CS and associated cabling with canon plug separately (IGN-CPC-10). Use IGN-CPC-ADD cable adder for each additional foot in length required over 10-feet.
QDADD	-	Add quick disconnect/cam and groove coupler on GHE2-5 in place of the standard flange connection to the burner mounting tube.
IGN-CPC-10	IGN-CPC-ADD	Igniter cable 10 ft with canon plug for POWERPACK-12-CS. From power pack to igniter. To add length, use IGN-CPC-ADD.

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Table 1. GHE Igniter Ordering Guide. (Continued)

Base Part Number	Length Adder	Description
POWERPACK-12-CS	-	12 Joule Power Pack, 120/220Vac/50-60Hz (date code dependent)
NEMA-4X-ADD	-	NEMA 4X enclosure for igniter powerpack.
NEMA-4-ADD	-	NEMA 4 enclosure for igniter powerpack.
NEMA-12-ADD	-	NEMA 12 enclosure for igniter powerpack.

Table 2. GHE Igniter Field Replacement Ordering Guide.

Base Part Number	Length Adder	Description
IPASS	HEPADD	GHE igniter probe assembly without burner mounting tube, flange, gas insert or air/gas flex hoses. Includes high energy probe, igniter tip 12 in. long x 1/2 in OD and junction box with receptacle. Standard assembly length 2 feet. Use HEPADD for each 1-ft assembly length addition. Order 12-Joule POWERPACK-12-CS and associated cabling with canon plug separately (IGN-CPC-10). Use (IGN-CPC-ADD cable adder for each additional foot in length required over 10-feet.
QDADD	-	Add quick disconnect/cam and groove coupler on GHE2-5 in place of the standard flange connection to the burner mounting tube.
IGN-CPC-10	IGN-CPC-ADD	Igniter cable 10 ft with canon plug for POWERPACK-12-CS. From power pack to igniter. To add length, use IGN-CPC-ADD.
POWERPACK-12-CS	-	12 Joule Power Pack, 120/220Vac/50-60Hz (date code dependent)
NEMA-4X-ADD	-	NEMA 4X enclosure for igniter powerpack.
NEMA-4-ADD	-	NEMA 4 enclosure for igniter powerpack.
NEMA-12-ADD	-	NEMA 12 enclosure for igniter powerpack.
GT-LITE	-	Igniter Spark tip / probe, 12 inch long x 1/2 inch OD.
IGN-CPC-LB	-	Replacement igniter probe junction box with canon plug receptacle for GHE igniters.
HV-HT	HV-HT-FT	Replacement internal GHE igniter cable with contact, 2-feet length standard. Internal cable from igniter tip to junction box. Use HV-HT-FT cable adder for each additional foot in length required.

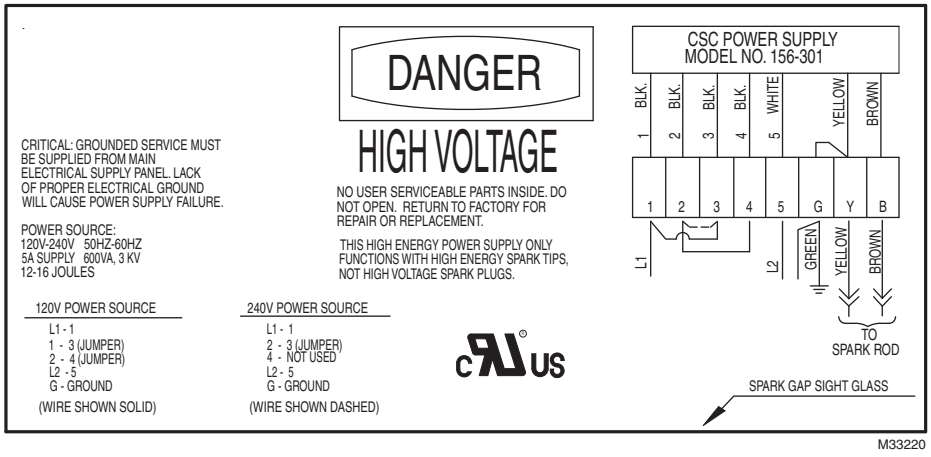

Fig. 1. Power pack label.

Theory of Operation

The energy output of the igniter is rated in joules, and refers to the energy of each pulse. The standard 12 joule power pack supplied with the GHE series igniters produces about 3–5 pulses per second.

The igniter spark tip is self-cleaning. When properly maintained and operated, it will provide very high availability and will consistently light off fuels.

The mixing chamber in the igniter provides a fuel rich zone for the high energy ignition sparker to provide first stage ignition. The fuel rich zone is 5-10% of the total fuel input. The remaining fuel is mixed with air and ignites from the first stage. The second stage provides the rated output and a stable

flame even with high velocity surrounding combustion air. Perforated plates function as a shield and also provide additional air for stable combustion.

The CSC156-301 power pack (Honeywell Part # POWERPACK-12-CS) is designated for intermittent operation. The duty cycle is 1 minute on, with 3 minute off cool down period.

IMPORTANT

Under no circumstances should the POWERPACK-12-CS be used for continuous firing of the igniter.

INSTALLATION

When Installing This Product…

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in these instructions to make sure the integrated furnace control is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out operation as provided in these instructions.

⚠ WARNING

Fire or Explosion Hazard.
Can cause severe injury, death or property damage.

⚠ WARNING

Electrical Shock Hazard.
Can cause severe injury, death or property damage.
Disconnect power supply before beginning wiring or making wiring connections to prevent electrical shock or equipment damage.

⚠ WARNING

High Voltage Present
High Voltage is stored in the capacitor and may be present **even after** power has been disconnected. Use a high-voltage grounding probe to ensure the capacitor is fully discharged.

The GHE Pilot igniter should be mounted to the burner at the location specified by the burner manufacturer. Ensure adequate clearance for removal.

The driving energy for the spark probe comes from the power pack. Since the power pack is delivering high voltage and high currents, the distance between the power pack and the igniter tip can be critical. Long cable runs increase the voltage drop and thus deliver lower power to the igniter tip. To reduce power loss on the high tension line, cable should be limited to 20 feet or less in length (about 6 meters). If a longer cable length is required, contact the factory.

The power pack can be mounted in an optional NEMA/IP enclosure. NEMA 4, 4X and 12 enclosures are available from the factory.

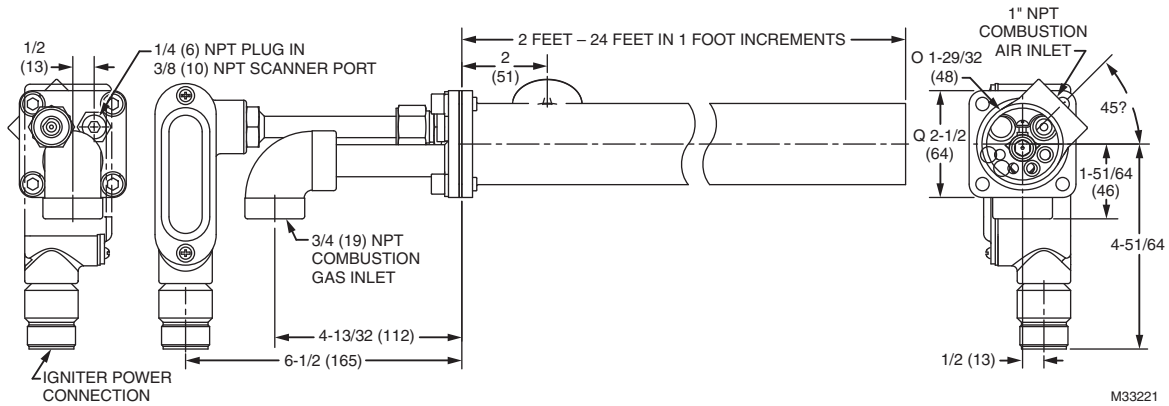

Fig. 2. Igniter example.

Equipment Storage

For long-term storage, store the igniter in a heated facility to minimize condensation and corrosion. The normal storage temperature range is -20 °F to 180 °F (-29 °C to 82° C). However, if it is suspected that the unit has been exposed to water or extreme temperatures, it is advisable to thoroughly dry the igniter and then troubleshoot the system (see “Troubleshooting” on page 4), or at least thoroughly check out the igniter (see “Checkout” on page 4).

CHECKOUT

Operate the igniter and its control system before attempting a lightoff. This can often be accomplished by manually shutting off the fuel valve and then bypassing various interlocks.

IMPORTANT

This should only be attempted with the knowledge and consent of the burner's operator(s).

1. Check all physical, electrical, and air connections.
2. Power up the igniter to make sure that it is sparking correctly.

⚠ WARNING

Fire or Explosion Hazard.
Can cause severe injury, death or property damage.
The igniter is delivering the spark into a combustion area. Ensure the furnace is properly purged and the fuel is introduced in the designed controlled manner as required to meet national and local codes.

3. If any difficulty occurs at this point, see "Troubleshooting" on page 4. If the igniter is sparking, the system is ready to test lightoff.

TROUBLESHOOTING

If a fuel ignition problem occurs, check that the igniter is sparking at the tip. If it is, then the ignition problem is most likely because fuel and air are not being delivered to the tip. Verify that both fuel and air are present.

⚠ WARNING

Electrical Shock Hazard.
Can cause severe injury, death or property damage.
High voltages may be present even if the power is disconnected. Troubleshooting this equipment should be done by trained personnel only!

No Spark

If no spark is observed during the igniter cycle, check the following:

1. Check supply power to the power pack; make sure there is proper voltage to the correct terminals.
2. Turn off power and ground the high tension cable using high tension ground probes before proceeding.
3. Check that all wires are connected properly to their termination points.
4. With the high tension cable disconnected, check continuity to the spark tip.
5. If necessary, replace the power pack.
6. Carbon buildup will not affect the spark tip. If necessary, replace the spark tip. Disconnect the high tension cable. To remove the tip, hold the tip nut and loosen the socket nut. To remove, pull the tip straight out.
7. Remove spark tip and check for a high tension cable continuity between the power pack end and the spark tip end. If the high tension cable or connector are damaged, replace them.
8. Try the igniter with a power pack known to be good. If the igniter sparks, replace the power pack. A defective power pack cannot be field repaired. Before removing make sure the power is off and short each terminal to ground using a high tension probe, to make sure all voltage is drained. See "High Voltage Present" on page 3.

Sparking along cable

If the igniter is sparking from the cable to ground:

1. Turn off the power. Make a visual check of the igniter cables and electrical connectors. Ensure that the cables are not damaged, connectors are seated properly, and all wires are connected properly to their termination points.
2. Check the cable connectors and make sure both ends of the cable braid are well grounded, if using armored cable.

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